

July 30, 2004

BY ELECTRONIC FILING

Ms. Marlene H. Dortch, Secretary  
Federal Communications Commission  
The Portals  
445 Twelfth Street, S.W.  
Washington, D.C. 20554

Re: ET Docket No. 00-258  
*Ex Parte Presentation*

Dear Ms. Dortch:

On Thursday, July 29, 2004, Lawrence Krevor, Michael Ha, and I spoke with John Muleta, Blaise Scinto, Scott Delacourt, Uzoma Onyeije, Thomas Stanley, and Marty Liebman of the Wireless Telecommunications Bureau concerning the need for additional spectrum allocations suitable for advanced wireless services. We addressed the feasibility and benefits of auctioning paired "H Block" frequencies at 1915-1920 MHz and 1995-2000 MHz. A copy of our presentation is attached.

The Commission has sought comment on these issues in ET Docket No. 00-258. Under section 1.1206(b)(2) of the Commission's rules, 47 C.F.R. § 1.1206(b)(2), please associate this letter with ET Docket No. 00-258.

Sincerely,

*/s/ Trey Hanbury*

Trey Hanbury  
Senior Counsel  
Nextel Communications

CC: John Muleta, Blaise Scinto, Scott Delacourt, Uzoma Onyeije, Thomas Stanley, Marty Liebman

# H Block: Alleviating Spectrum Scarcity While Protecting Incumbent Licensees

Nextel Communications

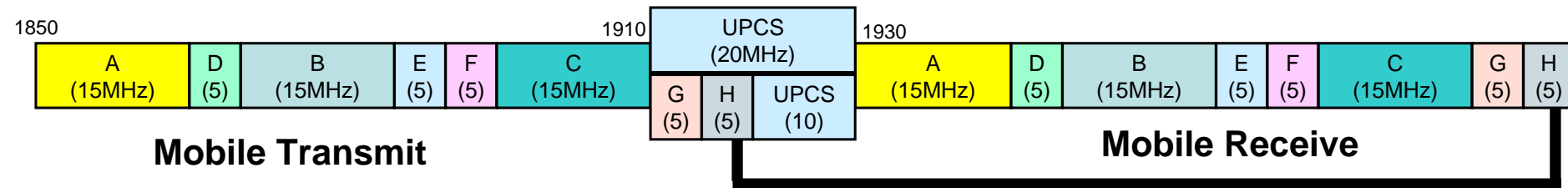
Presentation to the Federal Communications Commission

July 29, 2004

# Moving More Spectrum to Market

- Spectrum scarcity remains a critical problem for all wireless carriers.
  - Celco Partnership 10-K (dba Verizon Wireless) dated as of March 12, 2004: “we anticipate that we will need additional spectrum to meet future demand . . . ”
  - Cingular Wireless 10-K dated as of February February 24, 2004: “We anticipate needing access to additional spectrum . . . throughout our network to provide full 3G services . . . ”
  - “Auction it, get it out of the way, and let the market drive technology deployment” – Bill Stone, Executive Director of Network Strategy, Verizon Wireless, FCC Wireless Broadband Forum, May 19, 2004
- The answer: allocate an H Block for AWS use to help alleviate the chronic spectrum shortage, provided that there are sufficient protections for incumbent licensees.

# H Block Overview



## H Block

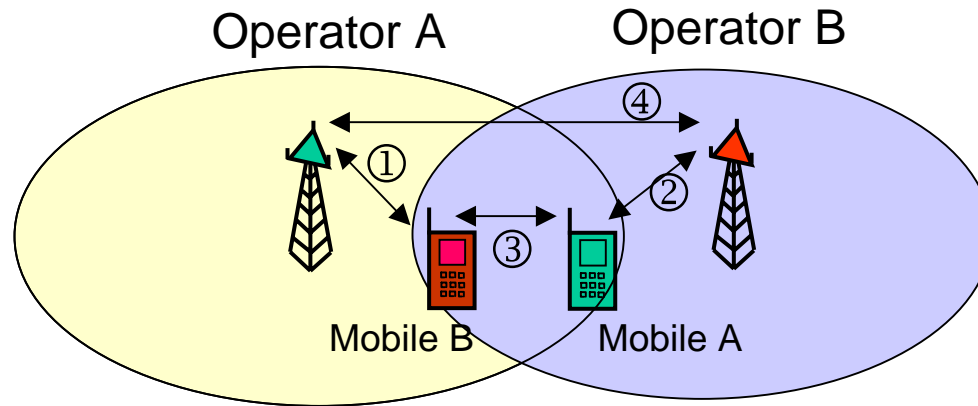
- The proposed H Block is 10 MHz (5 MHz x 5 MHz) of paired spectrum at 1915-1920 MHz and 1995-2000 MHz
- Nextel supports auctioning H Block, subject to reasonable constraints to protect incumbents, such as A Block at 1930-1945 MHz and MSS and MSS ATC at 2000-2020 MHz

# Protecting Against Interference

- Four possible interference scenarios exist in H Block:
  - Mobile-to-base scenario
  - Base-to-mobile scenario (similar to above)
  - Base-to-base scenario
  - Mobile-to-mobile scenario
- These interference scenarios are not new and not unusual; they should not pose a problem for either new entrants or the incumbent licensees.
  - Precisely the same types of intra-band and inter-band interference issues exist in today's CMRS bands.
- While encumbrances may constrain potential use of the H Block somewhat, bidders can simply figure the value of these encumbrances into their auction bids and reduce their bids accordingly.

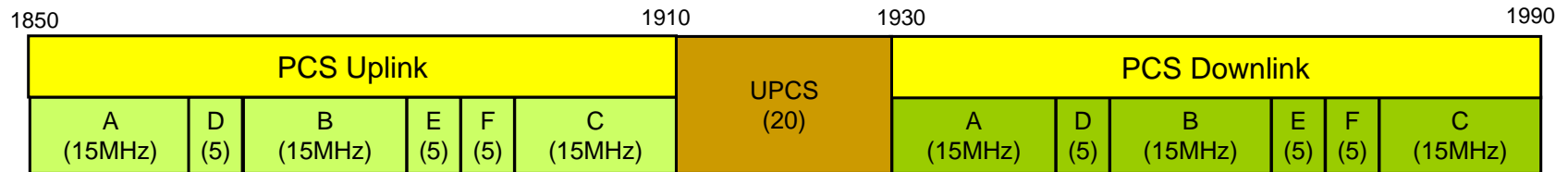
# Intra-band Interference

- The potential for interference exists whenever more than two operators share the same band.
- This problem is common to CMRS; operators know how to manage it.



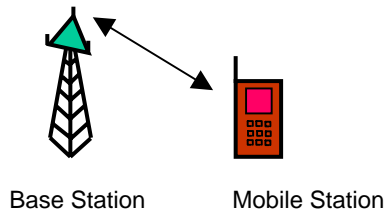
Interference Scenarios	Descriptions
1-2. Mobile-to-Base Base-to-Mobile	<ul style="list-style-type: none"><li>• <i>Very common interference issue in a near-far situation</i></li><li>• <i>Collocation usually resolves the issue</i></li></ul>
3. Mobile-to-Mobile	<ul style="list-style-type: none"><li>• Frequency separation between uplinks and downlinks allows adequate isolation</li><li>• No problems within FDD systems</li></ul>
4. Base-to-Base	

# PCS Intra-band Interference



- The current 1.9 GHz PCS band can have up to six CMRS operators in a given geographic area (BTA).
- Base stations are usually designed to support only the licensed block(s) to reduce interference; however, mobile stations are designed to work across the entire band and are, therefore, susceptible to interference.
- For nearly two decades, CMRS licensees have designed their networks to overcome this type of interference.

# Base-to-Mobile/Mobile-to-Base Scenario



Adjacent Channel Interference Level (dBm/MHz)	Distance Separation (Meters)	Free Space Path Loss	Resulting Interference Level (dBm/MHz)	Thermal Noise Floor KTB (dBm/MHz)	Rise over Thermal Noise Floor KTB*
-13	20 M	57 dB	-70	-114	44 dB
-13	50 M	65 dB	-78	-114	36 dB
-13	100 M	71 dB	-84	-114	30 dB

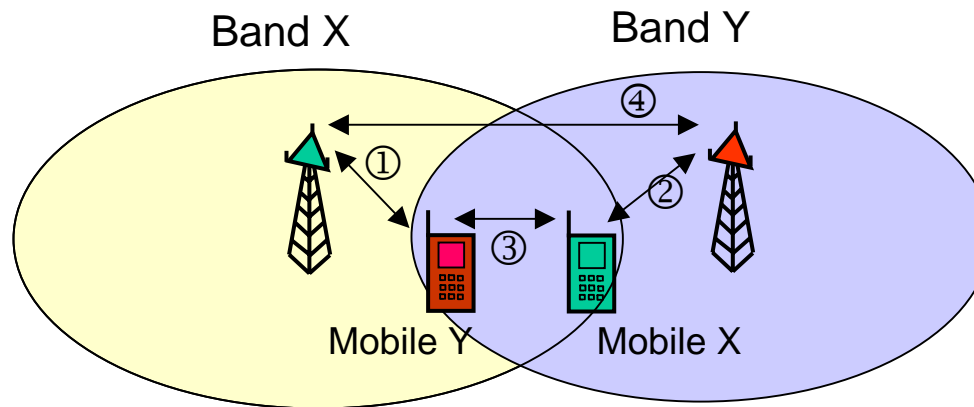
- These interference scenarios have not caused problems for CMRS operations because, among other things:
  - The actual OOB mask exceeds the FCC limit;
  - Practical path loss is greater than the free-space model;
  - Systems are designed with margins to overcome certain levels of interference;
  - A probability factor exists whenever a mobile station is involved; and
  - Base-station collocation mitigates the problem.

\* For simplicity, antenna gain and noise of the receiver have not been accounted for.



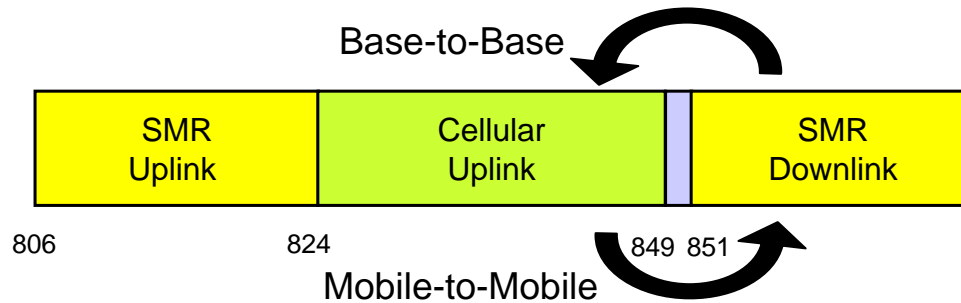
# Inter-band Interference

- The potential for inter-band interference exists whenever there is an up/downlink transition. Here too, this problem is common to CMRS; operators know how to manage it.



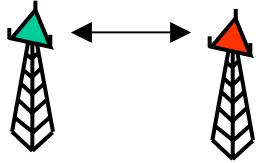
Interference Scenarios	Descriptions
1-2. Mobile-to-base Base-to-mobile	<ul style="list-style-type: none"><li>This is identical to the intra-band interference case</li></ul>
3. Mobile-to-mobile	<ul style="list-style-type: none"><li><i>Base-to-base issue may become more significant when an uplink-downlink transition exists</i></li><li><i>Collocation usually exacerbates the problem</i></li></ul>
4. Base-to-Base	

# SMR Inter-band Interference



- SMR and cellular operations in the 800 MHz bands have the potential for inter-band interference.
- For more than a decade, however, SMR and cellular operators have managed this interference potential while providing service to millions of customers.

# Base-to-Base Scenario

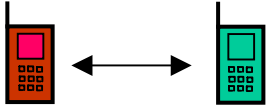


Adjacent Channel Interference Level (dBm/MHz)	Distance Separation	Free Space Path Loss	Resulting Interference Level (dBm/MHz)	Thermal Noise Floor KTB (dBm/MHz)	Rise over Thermal Noise Floor KTB*
-13	3 M	41 dB	-54	-114	60 dB
-13	20 M	57 dB	-70	-114	44 dB
-13	50 M	65 dB	-78	-114	36 dB

- Filters play a crucial role in eliminating interference by overcoming the increased noise indicated in the far right-hand column above.
- In the 800 MHz SMR band, for example, Nextel protects adjacent cellular base stations through filters installed in all 17,000+ Nextel base stations.
  - Beginning more than a decade ago, Nextel deployed a filter in every iDEN base station to provide 60 dB of additional filtering at the cellular band edge.
  - A cost of doing business, these filters protect cellular base stations from the scenario stated above and prevent Nextel from impeding operations by its 800 MHz competitors.

\* For simplicity, antenna gain and noise of the receiver have not been accounted for.

# Mobile-to-Mobile Scenario



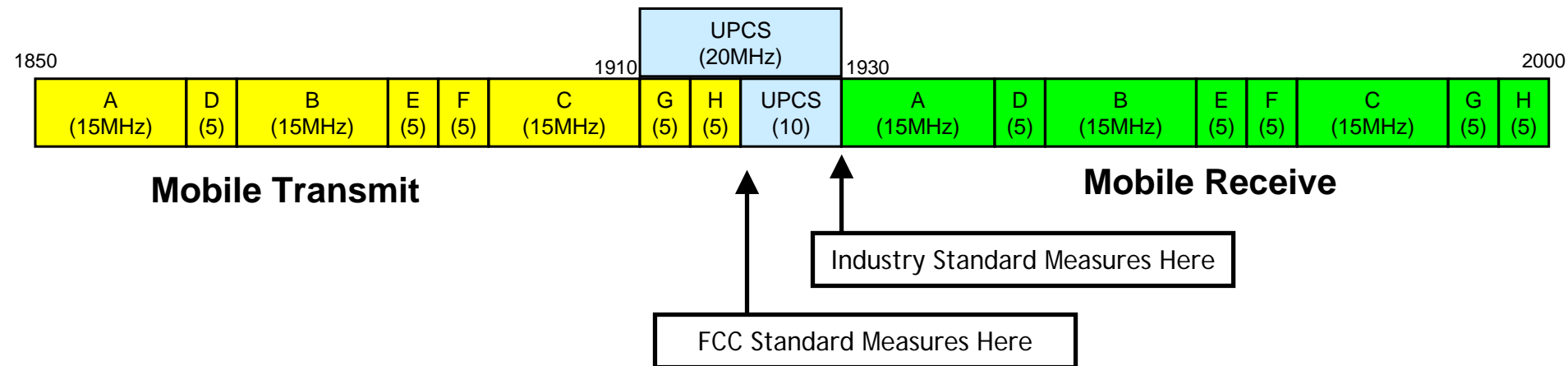
- Mobile-to-mobile interference could only occur if all of the following events happened simultaneously:
  - The interfering mobile transmits at full power; and
  - The victim mobile receives poor coverage; and
  - Both victim and interfering mobile are simultaneously active; and
  - Both victim and interfering mobiles are in close proximity.
- This type of interference is highly unlikely and has not affected Nextel's customers in any meaningful way.

# Other Possible Considerations

- Duplexer
  - While current duplexer design requires a minimum duplexer gap of 15 MHz to function properly, technology is advancing quickly.
  - Even if one believed technology would never advance, however, a bidder could simply discount his bid accordingly.

# Industry Standards

- FCC Rules and Industry Standards use different reference measurements.



- FCC rules refer to transmitters and are therefore referenced to the channel edge
- Industry standards refer to receivers and are therefore referenced to the receive band
- Industry standards are not uniform for all technologies and bands; different systems put different noise into the the mobile-receive band today

# Summary

- Carriers have managed various types of interference issues for years without difficulty.
- H Block is entirely feasible for AWS use and does not present any new or novel issues that carriers and manufacturers have not solved before.
  - Any interference issues are, at most, variations on existing situations.
  - Carriers can manage these issues with reasonable service and licensing rules.